

What is claimed is:

1. A filter housing system comprising:
 - a filter housing sump having a central cavity and an axial opening for providing access to the central cavity, the central cavity being configured and dimensioned for receiving and seating a filter media pack therein;
 - 5 a filter housing head assembly configured and dimensioned to fit on the filter housing sump such that axial opening is covered thereby;
 - a clamping device for sealing the filter media pack between the filter housing head and the filter housing sump, the clamping device comprising:
 - at least two curved members, each curved member having
 - 10 two ends;
 - at least one hinge assembly, the at least two curved members being operatively pivotally attached to each other at one end by the at least one hinge assembly;
 - at least two tongue members, operatively positioned at the
 - 15 second end of the at least two curved members; and
 - at least one fastening device, the at least one fastening device being operative to force the at least two tongues members together such that an operator can generate sufficient torque to effectuate the seal therebetween, for facilitating the installation of the filter media pack in the
 - 20 filter housing sump.
2. The filter housing system of claim 1 wherein a radial body flange rim surrounds the housing sump adjacent to the opening and has a substantially planar surface portion defined along its periphery.
3. The filter housing system of claim 2 wherein the filter housing head assembly further comprises:
 - a radial flange rim configured and dimensioned to abut the radial
 - body flange rim of the housing sump when filter head assembly is operatively
 - 5 positioned on the housing sump, the radial flange rim having a substantially planar surface portion defined along its periphery for operatively contacting the planar surface portion of the radial body flange rim when the filter head assembly is operatively connected onto the housing sump.
4. The filter housing system of claim 1 wherein the at least two tongues further comprise:

means for receiving male and female fasteners and cooperating therewith to operatively secure the clamping device.

5 5. The filter housing system of claim 1 wherein the at least two curved members are configured and dimensioned to engage both the radial body flange rim and the radial flange rim when a filter media pack is installed therein and the filter head is operatively positioned on filter housing sump such that the compression load is distributed evenly around the entire outer periphery of the radial body flange rim and the radial flange rim when the clamping device is operatively engaged.

6. The filter housing system of claim 1 wherein the at least two curved members are shaped to correspond with the profile created by the radial body flange rim and the radial flange rim.

7. The filter housing system of claim 4 wherein the male fastener comprises:

a threaded eye bolt, having a threaded rod portion of sufficient length and a round flat head.

8. The filter housing system of claim 7 wherein the round flat head has a smaller diameter than a bore in the at least two tongues.

9. The filter housing system y of claim 7 wherein the female fastener further comprises:

a threaded bore for engaging the threaded rod portion of the male fastener; and

5 a knob having at least two protrusions, for facilitating the rotational motion necessary to secure the male and female fasteners to each other.

10. The filter housing system of claim 9 wherein the knob further comprises:

5 sufficient protrusions, operatively extending from the knob, for facilitating an operator to more easily grip the knob and to tighten the at least one fastener together thereby effectuating the necessary seal to operatively secure the filter media pack between the filter head and the filter housing sump such that an operator can generate sufficient torque to effectuate the seal therebetween.

11. The filter housing system of claim 1 wherein the filter housing head further comprises:

5 a lever and piston assembly for applying pressure to the filter media pack to force the filter media pack from any attachment that it may have had with the filter head.

12. The filter housing system of claim 11 wherein the lever is pivotally mounted on the filter head and operatively associated with the piston.

13. The filter housing system of claim 11 wherein the piston is mounted for slidable movement so that it extends from the exterior of the filter head to the interior of the filter housing to contact the filter media pack seated therein.

14. The filter housing system of claim 11 wherein the lever and piston assembly is configured to cooperate so that the force is translated to the piston by the lever at a location closer to the pivotal mounting of the lever than its opposing free end.

15. A filter housing assembly comprising:
a filter housing sump having a central cavity and an axial opening for providing access to the central cavity, the central cavity being configured and dimensioned for receiving and seating a filter media pack therein;
5 a filter housing head assembly configured and dimensioned to fit on the filter housing sump such that axial opening is covered thereby;
a clamping device for operatively positioning the filter head relative to the filter housing sump when the filter media pack is operatively positioned therein, the clamping device comprising:

10 at least two curved members, each curved member having two ends;

at least one hinge assembly, the at least two curved members being operatively pivotally attached to each other at one end by the at least one hinge assembly;

15 at least two tongue members, operatively positioned at the second end of the at least two curved members; and

at least one fastening device, the at least one fastening device being operative to force the at least two tongues members together such that an operator can generate sufficient torque to effectuate the seal between the filter media pack, the filter housing sump and the filter housing head assembly, for facilitating the installation of the filter media pack in the filter housing sump.
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16. The filter housing assembly of claim 15 wherein a radial body flange rim surrounds the housing sump adjacent to the opening and has a substantially planar surface portion defined along its periphery.

17. The filter housing assembly of claim 16 wherein the filter head assembly further comprises:

5 a radial flange rim configured and dimensioned to abut the radial body flange rim of the housing sump when the filter head assembly is operatively positioned on the housing sump, the radial flange rim having a substantially planar surface portion defined along its periphery for operatively contacting the planar surface portion of the radial body flange rim when the filter head assembly is operatively connected onto the housing sump.

18. The filter housing assembly of claim 15 wherein the at least two tongues further comprise:

means for receiving male and female fasteners and cooperating therewith to operatively secure the clamping device.

19. The filter housing assembly of claim 15 wherein the at least two curved members are configured and dimensioned to engage both the radial body flange rim and the radial flange rim when a filter media pack is installed therein and the filter head is operatively positioned on filter housing sump such
5 that the compression load is distributed evenly around the entire outer periphery of the radial body flange rim and the radial flange rim when the clamping device is operatively engaged.

20. The filter housing assembly of claim 15 wherein the at least two curved members are shaped to correspond with the profile created by the radial body flange rim and the radial flange rim.

21. The filter housing assembly of claim 18 wherein the male fastener comprises:

a threaded eye bolt, having a threaded rod portion of sufficient length and a round flat head.

22. The filter housing assembly of claim 21 wherein the round flat head has a smaller diameter than a bore in the tongue.

23. The filter housing assembly of claim 21 wherein the female fastener further comprises:

a threaded bore for engaging the threaded rod portion of the male fastener; and

- 5 a knob having at least two protrusions, for facilitating the rotational motion necessary to secure the male and female fasteners to each other.

24. The filter housing assembly of claim 22 wherein the knob further comprises:

- sufficient protrusions extending from the knob, for facilitating an operator to more easily grip the knob and to tighten the fasteners together. thereby
5 effectuating the necessary seal between the at least two curved members shaped such that an operator can generate sufficient torque to effectuate the seal therebetween when the filter media pack is positioned therebetween.

25. The filter housing assembly of claim 15 wherein the filter housing head further comprises:

- a lever and piston assembly for applying pressure to the filter media pack to force the filter media pack from any attachment that it may have
5 had with the filter head.

26. The filter housing assembly of claim 15 wherein the lever is pivotally mounted on the filter head and operatively associated with the piston.

27. The filter housing assembly of claim 15 wherein the piston is mounted for slidable movement so that it extends from the exterior of the filter head to the interior of the filter housing to contact the filter media seated therein.

28. The filter housing assembly of claim 15 wherein the lever and piston assembly is configured to cooperate so that the force is translated to the piston by the lever at a location closer to the pivotal mounting of the lever than its opposing free end.